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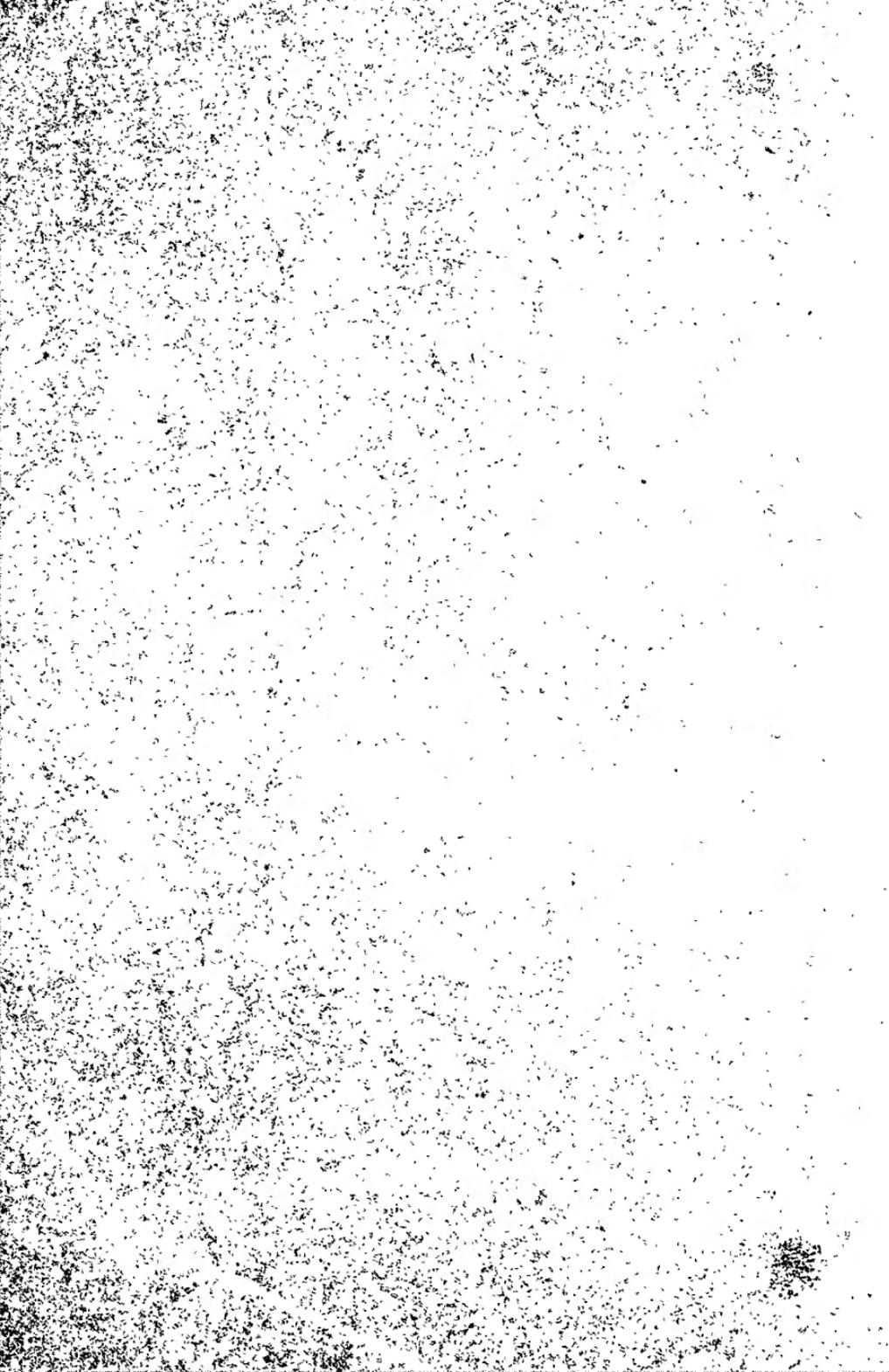
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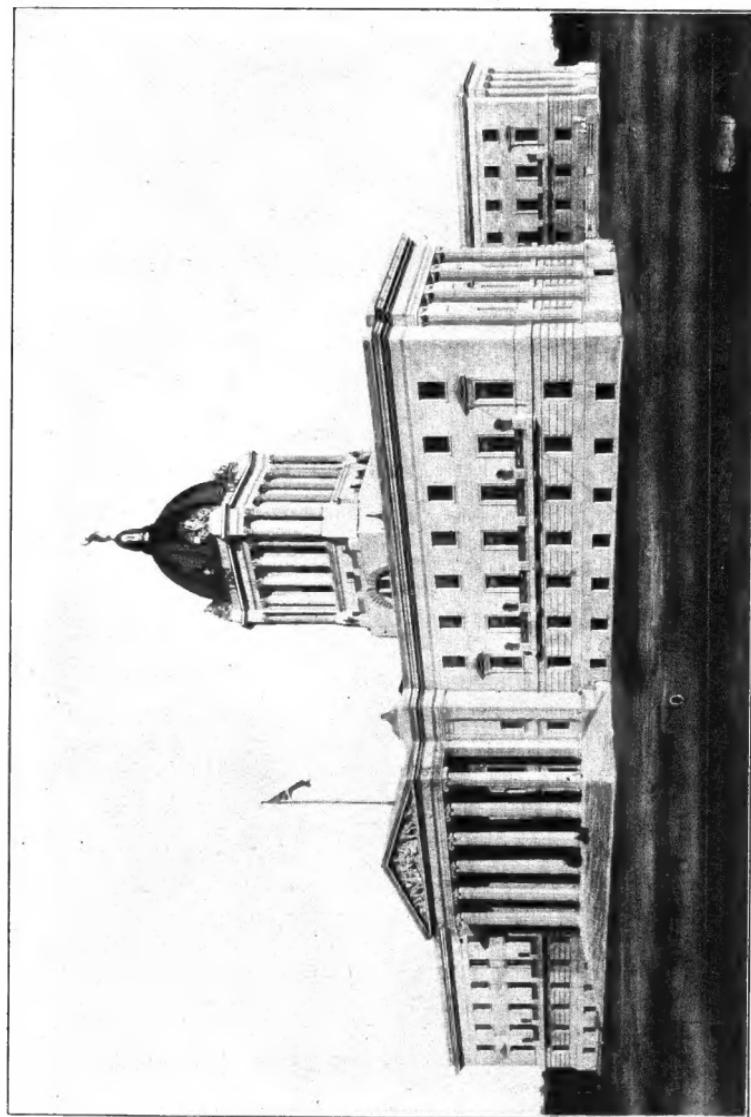


MINERAL RESOURCES — O F — MANITOBA

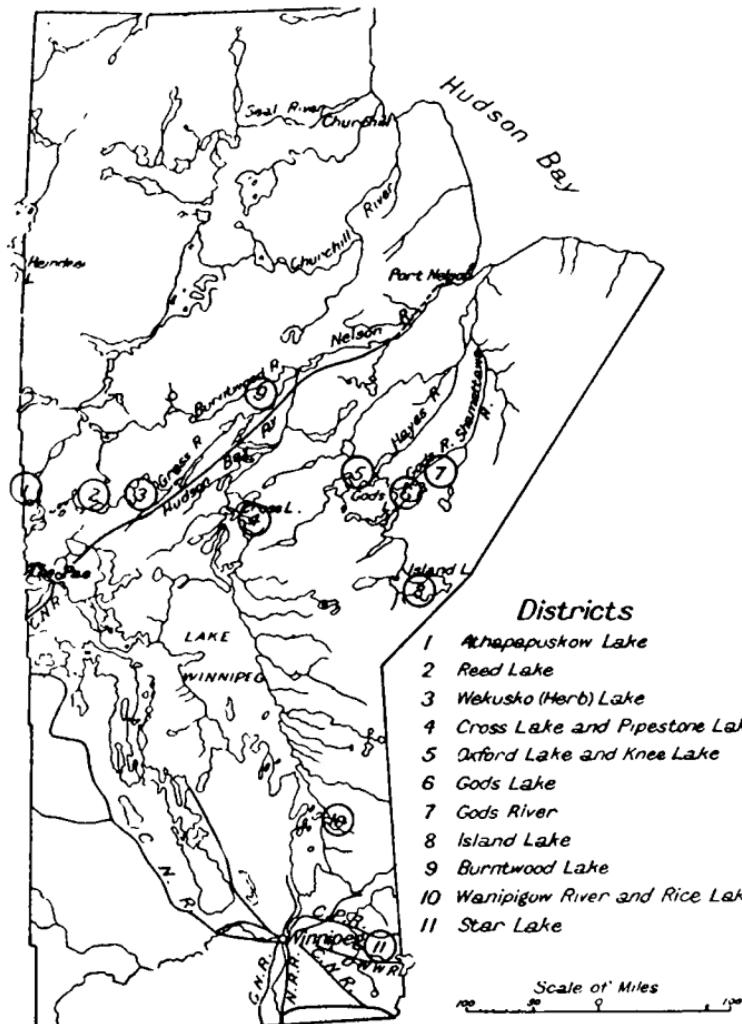


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*New Parliament Buildings, Winnipeg, Built of native limestone from Tyndall
Quarries, 30 miles from Winnipeg.*



Index Map of known mineral areas of Manitoba.

Note—Bear River (Lac du Bonnet) district not shown on this map lies about midway between Districts 10 and 11.

NORTHERN MANITOBA

In only one area in Northern Manitoba has prospecting been carried on at all extensively. This area, however, is fairly large, extending from the Saskatchewan-Manitoba boundary line eastwards to Wekusko (Herb) Lake and embracing in a north and south direction the width of the greenstone belt which forms the basin of the Grass River and continues westwards into Athapapuskow and Schist lakes. East of Herb Lake there is no continuous band of greenstone, but the isolated small bands by the Hudson Bay Railway line have attracted prospectors owing to their accessibility. Such bands are found on Pipe and Wintering lakes, on Halfway Lake, and interruptedly at other places as far east as Manitou Rapids, where the railway crosses the Nelson River. There are other greenstone areas in Northern Manitoba which have not yet been prospected and on which only a few claims have been staked. These include the Pipestone and Cross Lake areas, the Oxford and Knee Lake area, and the Island and God's Lake area. These are far removed from railway communication and have not yet received the attention which they would have had they been more easily accessible.

Mineral Belt North of The Pas

This belt extends from Flin Flon Lake on the Manitoba-Saskatchewan boundary eastward through Schist and Athapapuskow lakes into the Grass River system at the First Cranberry Lake and thence eastwards along the basin of the Grass River to a point somewhere beyond Herb Lake. There is also an isolated area in Pipe Lake and Burntwood River and small bands of greenstone have been prospected in the vicinity of the Hudson Bay Railway. Generally speaking, the western portion of the belt has shown itself to be a copper country, while gold is the principal mineral in the eastern portion. The length of the main belt (east and west) is approximately 100 miles with a variable width up to 15 miles and may be roughly subdivided into the following districts:

1. Flin Flon and Schist Lake district, which contains the Flin Flon property, the Mandy Mine, the Maybee claim immediately south of the Mandy property, the Phantom Lake claims immediately

west of the Mandy Mine and south of the Flin Flon, the Hook Lake claims and a number of others on Schist Lake.

2. Athapapuskow Lake district, which contains the Chica claim near the south of the Pine Root River, the Bailey-Durant claims east of Taitan Lake, the Thompson Lake claims and other properties on the east arm of Athapapuskow Lake and the Twin Lake district.

3. Copper and Brunne Lake district, which includes the famous "Big Dyke" on the west side of Copper Lake, the Red Rose and Bluebird claims adjoining the Big Dyke and a number of other claims on Copper and Brunne Lakes and on Webb Creek north of Elbow Lake.

4. The Herb and little Herb Lake district, which contains the gold quartz properties such as the Rex, the Northern Manitoba property (Moosehorn and Ballast claims) the Kiski-Wekusko claims, the Dauphin-Elizabeth group, the Bingo and a number of others all of which are within comparatively easy reach of the Hudson Bay Railway at Mile 82 by a government road to Herb Lake.

5. Wintering Lake, Pipe Lake and Hudson Bay Railway districts, where some claims were staked by the earlier prospectors in this country but little work has been done recently.

There has been little intensive prospecting done anywhere in Northern Manitoba, and there is much unprospected ground even in close proximity to the discoveries listed. It is a common saying that there has been practically no prospecting more than ten or fifteen miles away from the ordinarily travelled waterways and it will thus be realized that only a minute fraction of the mineral possibilities of the vast territory known as Northern Manitoba has as yet received any attention from the prospector.

The Flin Flon Property

This property was discovered in the summer of 1915 by the Hammell group of prospectors. It was seen at once to be a very important discovery and diamond drilling was initiated on the property and continued from March, 1916, to July, 1918. As a result of diamond drilling the ore body may be estimated to contain twenty million tons with average values:

Gold	.074	ounces	per	ton.
Silver	1.04	"	"	"
Copper	1.69	per	cent.	
Zinc	3.49	per	cent.	

The ore body may be described from the operations to date as one of the large low-grade copper deposits on the continent.

The type of ore necessitates smelting on the property and consequently railway transportation to the property before mining operations will be possible. During the past year active mining operations have been carried on with complete equipment and a



Scenes on Lake Athapapuskow where location stakes are as plentiful as lobsticks.

large force of men for the purpose of proving up the results obtained by diamond drilling. This work will be continued until the end of the year and the results so far have been such as to indicate that the ore body is even more solid and more extensive than was shown by diamond drilling. The property is being worked by interests who hold an option expiring early in 1921. It is confidently expected that the option will be taken up.

The Mandy Mine

This property was staked in the late summer of 1915, and was almost immediately taken over by the Tonopah Mining Company of Nevada. This property is remarkable in that a lens of very high grade sulphide of copper (Chalcopyrite) was discovered in the main ore body with an average percentage of copper of over 17 per cent. This lens has been mined and transported to the smelter in the face of transportation difficulties which have made its operation almost unique in the mining history of Canada. The ore was hauled 40 miles by wagon, 130 miles by barge and over 1200 miles by railway to the smelter at Trail. Altogether 25,000 tons have been mined from this lens and transported to the smelter. It is estimated that at least 200,000 tons of lower grade ore remain in the mine, and will be operated only when railway transportation makes it possible to mine at a profit.

Herb Lake District

Since the discovery of the Kiski property in the summer of 1914, interest in gold-bearing properties in Northern Manitoba has been



Legislative party on the big ore dump at Flin Flon.

centered around the Herb Lake District. A good deal of development work has been done on properties on the east side and north end of the lake, more particularly the Rex, Northern Manitoba (Moosehorn), Kiski-Wekusko and Elizabeth-Dauphin group. A mill was built on the Rex property in 1917-18, but owing to the

influenza epidemic and the shortage of labor and other difficulties connected with war conditions the work was temporarily abandoned. Active operation was resumed in June of this year and the mill started running in September. Considerable development work has also been done on the Northern Manitoba and a 30-ton trial lot put through the Rex mill a mile distant this fall yielded a brick of over 57 ounces. The Bingo property is also being developed, work being under way on a contract for a 200-foot shaft, the showings from which are reported to be very satisfactory. A shaft has also been sunk on the McCafferty property this year.

MINERAL AREAS OF SOUTHERN MANITOBA.

The areas in Southern Manitoba which have notable occurrences of mineral may be listed in two groups as follows:

Areas With Metallic Resources

Rice Lake District	Gold.
Bear River District	Nickel, Copper.
Star Lake, Hawk Lake and Falcon Lake areas	Gold, Tungsten, Molybdenum, Tin, Bismuth, etc.

Areas With Non-metallic Resources

Tyndall, Stony Mountain	Limestones for building.
Stonewall and other limestone areas	For lime, cement, concrete, road material, etc.
Gypsumville and other possible areas	Gypsum.
Turtle Mountain	Lignite coal.

There are over twenty-five brick-making plants in Manitoba, located in widely separated localities.

Petroliferous shales are found in the Cretaceous beds of the western part of Manitoba and oil seepages are reported from several outcrops of Devonian limestone.

Rice Lake District

The Mineral-bearing country to which the name "Rice Lake District" applies, lies in the pre-Cambrian area which occupies the country to the east of Lake Winnipeg. The centre of the district is only 100 miles in a northeasterly direction from Winnipeg. Owing to the lack of a railroad and of summer roads, the mineral de-



Showing effects of glaciation in the Rice Lake District.

posits are reached by canoes during the summer and by sleigh roads during the winter. A summer wagon-road is being built at the present time, running for Wanipigow river to the heart of the mineral-bearing area.

The discovery of gold on Rice Lake by Captain Pelletier in 1911 caused the first prominent interest in the possibilities of this part of the country as a source of gold. Since 1911 the area has been fairly generally prospected; numerous claims have been staked, many of them with promising showings of gold-bearing quartz; and the area showing gold has been extended to a wide belt over 50 miles in length and with an area of about 400 square miles.

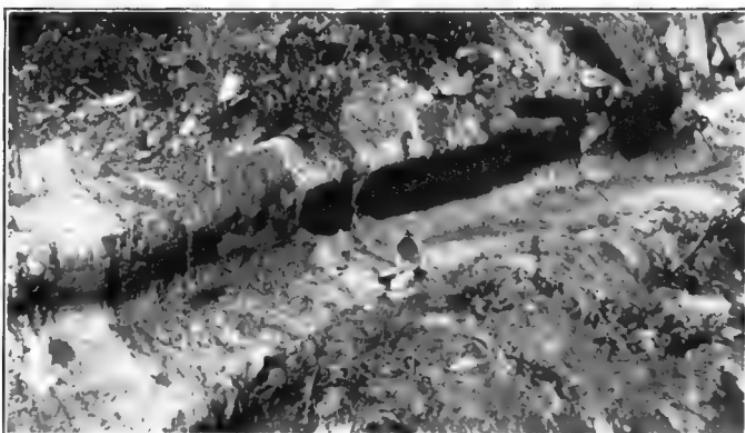
The rocks of the area include felsite, porphyry and greenstone schists together with some altered sedimentaries, all of which have been intruded by porphyries and granites. Nearly all of these rocks carry gold quartz in the form of veins and as portions of sheared zones, some of which are very large.

Wonderful samples of free gold have been brought from many claims in this district. A great many small veins show free gold well distributed on their outcrops. Many of the larger showing have not been carefully investigated, but would seem to warrant the cost of careful surface development and sampling.

The extent of the major operations in the district is indicated by the fact that of eleven claims, each has underground workings of more than 100 feet and together they have a total of over 2300 feet, giving an average of 200 feet to the claim. There are many other shallower workings. Minor developments represent at least an equivalent amount of work to the major ones.

In forming an estimate of the possibilities of the district as a gold producer, the following statements should be considered:

- (1) The area showing gold is a large one; it is growing year by year by the finding of fresh outlying fields; and new finds are being constantly made in the older portions of the district.
- (2) Though there has been a good deal of development in places, no property is as yet a gold producer. The best surface showings are not in all cases the ones that have received most attention.



Showing effects of glaciation in Rice Lake District.

Among the factors that have prevented production in the district, perhaps the one that should receive most weight is the very inferior transportation system from which the district is suffering.

- (3) As a promising field for prospecting, the area is by no means exhausted. In fact it has been no more than scratched. Of an

area of roughly 400 square miles of surface, probably not over 50 square miles have been prospected and even this portion has not been exhaustively examined. It is unfortunate that a good deal of the district has been tied up by claims staked for "location," but there is a good deal of open country left for the prospector and in most cases old claims could be examined by arrangement with the holders.

Bear River District

This district lies to the north of the upper waters of Bear River, a small stream which runs into Winnipeg River from the east at a point a few miles above the mouth of the latter on Winnipeg lake.

The first location of a mineral claim from this part of the country was made in December, 1917, when the Mayville claim was recorded. It is said that the deposit had been known to a Fort Alexander Indian for twenty-five years.

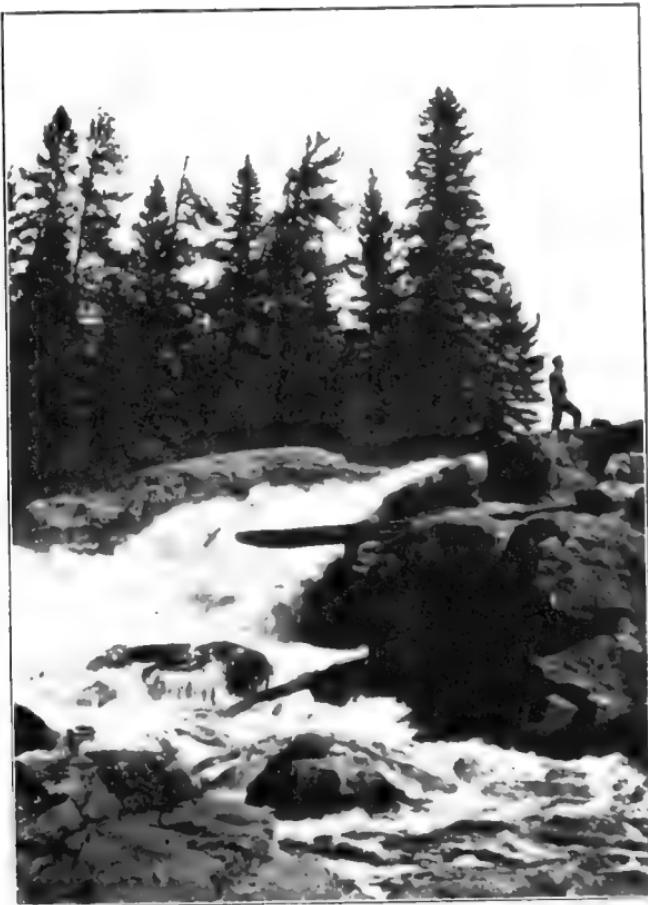
Very little work has been done in the area, but there is sufficient to show that there are some promising outcrops of copper-nickel ore of the Sudbury type.

The interesting portion of the district occupies an area of about 16 square miles where a body of norite has intruded some old greenstone. As well as being intrusive into the greenstone, the norite probably intrudes the granite masses of the area, which were later than and intruded the greenstone. The area occupied by norite and greenstone outcrops is surrounded by granite on all sides. An interesting differentiation product from the norite magma, is an anorthosite which occurs in relatively small areas and which consists mainly of large crystals of plagioclase feldspar.

On account of their irregularity and of the fact that little work has been done on the deposits, it is difficult to determine in just what way they occur. Pyrrhotite and chalcopyrite are found scattered through fine-grained norite and in adjacent greenstone schists in such ways as to suggest several modes of deposition: (1) Differentiation from magma is indicated, though not prominently in some parts of the mineral deposits; (2) filling of openings, which are usually small, along zones of fracture; (3) replacement along zones of fracture. The sulphides are typically disseminated in small grains; bunches are comparatively rare. Some narrow fissures show fairly solid sulphide masses. The sulphides typically form from 50 to 30 per cent of the volume of the ore. Little is known of the values and extent of these mineral deposits. Some

information, which is considered to be reliable, indicates that outcrops with considerable area have percentages between 2 and 4 of copper and 1 and 2 of nickel.

These deposits are regarded as being worth considerable attention. They are quite handy to sources of electrical power. Though



Falls on Bear River

the area showing possibilities for nickel and copper is relatively small, there is no reason why similar occurrences of metal-bearing norite should not appear in neighboring parts of the country.

District in the Vicinity of Hawk, Star and Falcon Lakes

This is a district in southeastern Manitoba lying to the south of the main line of the C.P.R. and close to the Ontario boundary. It first attracted attention during the "boom" period which accompanied gold mining on Lake of the Woods, and attempts have been made at gold mining in this district during several of the years that have elapsed since that time. In recent years added interest has been taken in this part of the province on account of the discovery of some of the more unusual types of mineral deposits.

In 1917 some claims were staked which showed deposits of molybdenite. In the year or two following other discoveries were made; the earlier ones near Falcon Lake and the later ones near High Lake, Ontario, and in other parts of the district. The molyb-



Sampling the Tinney claims in Bear River District.

denite occurs: (1) As large crystals and masses of crystals in pegmatite dikes which cut hornblende schists in the vicinity of their parent granite masses; (2) as smaller crystals and grains in aplite dikes; and (3) as disseminated grains and particles in stockworks and veins of quartz which are also apt to carry small values in gold and which in a few occurrences carry notable amounts of bismuth.

In 1918 some deposits carrying tungsten in the form of scheelite were discovered. Some work was done on one of these deposits and a few hundred pounds of concentrates were obtained from a small shipment of hand-sorted ore. The scheelite occurs in association with epidote, vesuvianite and other high-temperature silicates,

and appears in patchy and other irregular outcrops in hornblende and other schists. It was apparently derived from the same granite that was the parent of the deposits of molybdenite.

In the vicinity of the different lakes in the district are found some large veins and impregnated zones of sulphides. These seem to carry small and variable values in several metals. Among the sulphides are pyrrhotite and pyrite in prominent amounts, arsenopyrite, chalcopyrite and sphalerite in smaller amounts and there are some evidences of galena, molybdenite and some tin-bearing sulphides. The deposits are large and numerous but indications are that values are so low and come from so many metals that it would be impossible to work them.

A few gold claims in the area seem to merit attention. Many other kinds of deposits are found in this district, most of which seem to be too small to be profitable. Though this part of the country has been prospected as much as any in the province, the search has not been exhaustive, and there may be rewards even here for the thorough prospector.

BUILDING MATERIALS IN MANITOBA

Building Stone—Limestone for building purposes is extensively quarried at Tyndall and at Stonewall, Stony Mountain, Rockspur and Gunton, all within a short distance of Winnipeg. The Tyndall limestone is of very fine quality and was used for the New Parliament building at Winnipeg, also the Saskatchewan Parliament building at Regina. This stone is also calcined for the manufacture of limestone at several places in the province. Granite has been quarried at the east side of Lake Winnipeg and also along the railway line of the Greater Winnipeg Water District to the east of Winnipeg. Sandstone has been quarried in the Turtle Mountain district near Boissevain and Deloraine. A bluish and whitish anhydrite occurs near Gypsumville. Marble of fine quality is found on Marble Island in Hudson Bay and also at Fort Churchill.

Clay Products—Good brick clays in unlimited quantity are obtainable from the shales of the Pierre series. Bricks are manufactured at sixteen points, sand lime bricks at Winnipeg, Brandon and Beausejour. A semi-refractory shale occurs in Turtle Mountain, La Riviere and near Virden.

Cement—A natural cement is manufactured at Babcock, southeast of Winnipeg. Cement materials are found east of Lake Winnipeg and near Arnold. Limestone is quarried at Steep Rock, near Lake Manitoba, by Canada Cement Company for Portland cement.

Coal—Several seams of lignite or brown coal underlie the northern flank of Turtle Mountain in the southwestern part of the province. Work has been done at several points, but no active mining has been undertaken. A new system of briquetting has been evolved by the Lignite Utilization Board of Canada, and the first plant will operate in 1921. A briquette equal to American anthracite at a reduction in cost of 40 per cent. is expected.

Gypsum—Large deposits of gypsum have been found in the townships lying north of Lake St. Martin. The deposits are worked by the Manitoba Gypsum Company, Limited. The crude gypsum is shipped from the mines (Gypsumville) north of Lake Winnipeg, to the works at Winnipeg, whence the crushed gypsum is supplied to cement factories; the calcined product is manufactured into wall plaster, hollow tiles, etc.



The Dump of Chalcopyrite from the Mandy Mine

October 23rd, 1920

While this bulletin is going to press information has been received that nickel-copper deposits similar to those occurring on Bear River have been located north of Bird River about 10 miles south-east of the earlier discoveries.

This is a further indication that the country lying to the north-east of Lac du Bonnet is a very promising one for further prospecting.

SOME FACTS ABOUT MANITOBA

Area	251,832 square miles
Area of Northern Manitoba (added to province in 1912)	178,000 square miles
Area of Known Arable Land	30,000,000 acres
Area Occupied	About 14,000,000 acres
Area Actually Under Cultivation	About 9,000,000 acres
Population, 1920	620,000
Population of Greater Winnipeg, 1920, Estimate	270,000
There are approximately 50,000 farmers in the province.	
Values of Agricultural products, 1919	\$162,462,000
Increase in value of live stock, 1919	27,000,000
Value of Mineral Production (including Building Material), 1919	2,868,378
Value of lumber cut, 1919	1,250,000
Value of fisheries, 1919	1,008,717
Value of manufactures, 1919	95,000,000
The agricultural lands of Manitoba are capable of sustaining a population of 30,000,000.	
Railways in Manitoba	4463 miles
Waterpower Available on Winnipeg River	500,000 H.P.
Waterpower Available in Northern Manitoba	3,000,000 H.P.
(at ordinary minimum flow);	4,300,000 H.P. with storage.

